

Armed Forces College of Medicine

AFCM





The Facial Nerve

By

Prof Azza Kamal

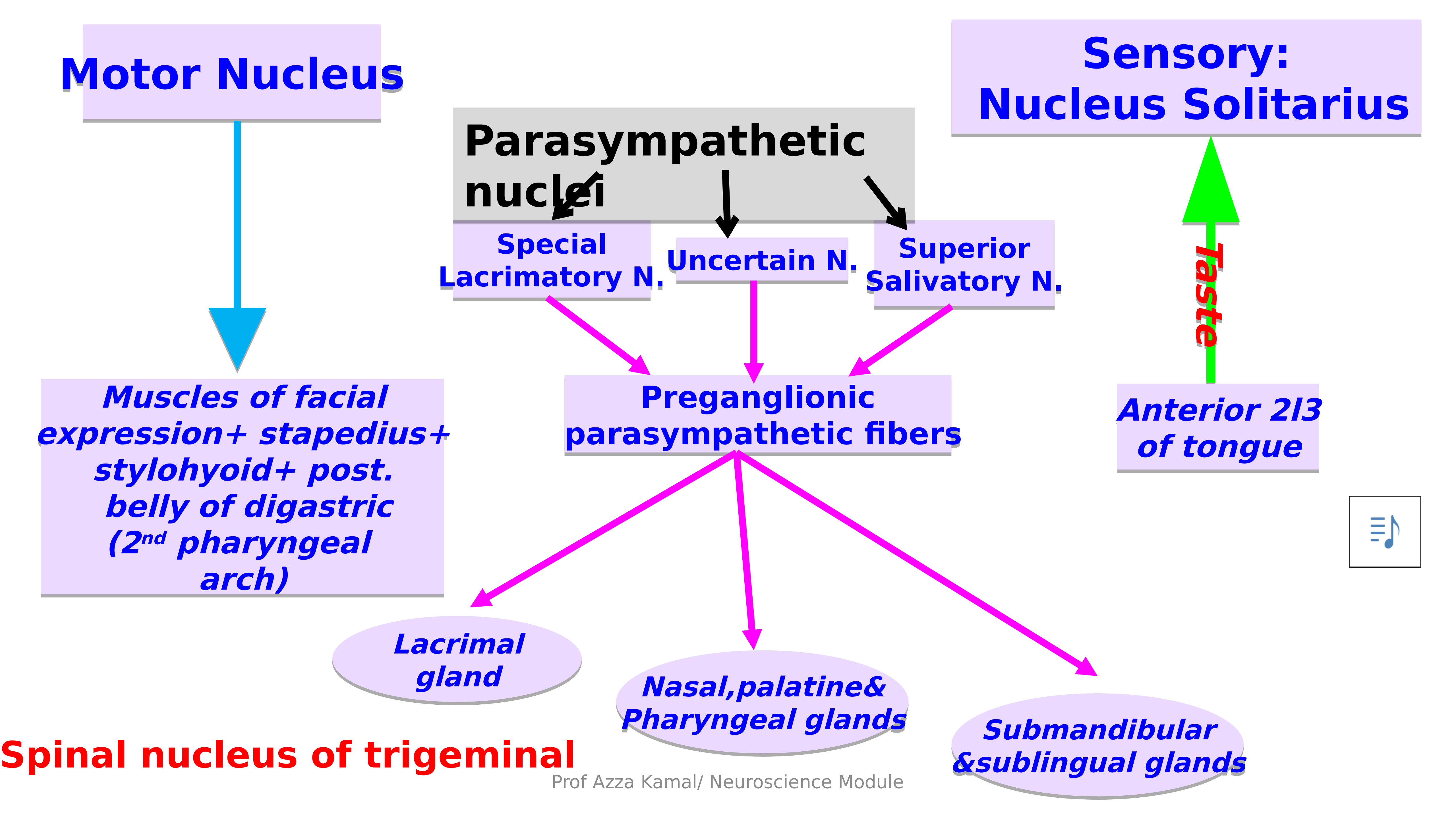
INTENDED LEARNING OBJECTIVES (ILOs)

By the end of this lecture the student will be able to:

- ❑ List nuclei of the facial nerve.
- ❑ Describe the course & distribution of the facial nerve.
- ❑ Test for integrity of the facial nerve.
- ❑ Predict the effects of lesion of the facial nerve.

KEY POINTS OF THE LECTURE

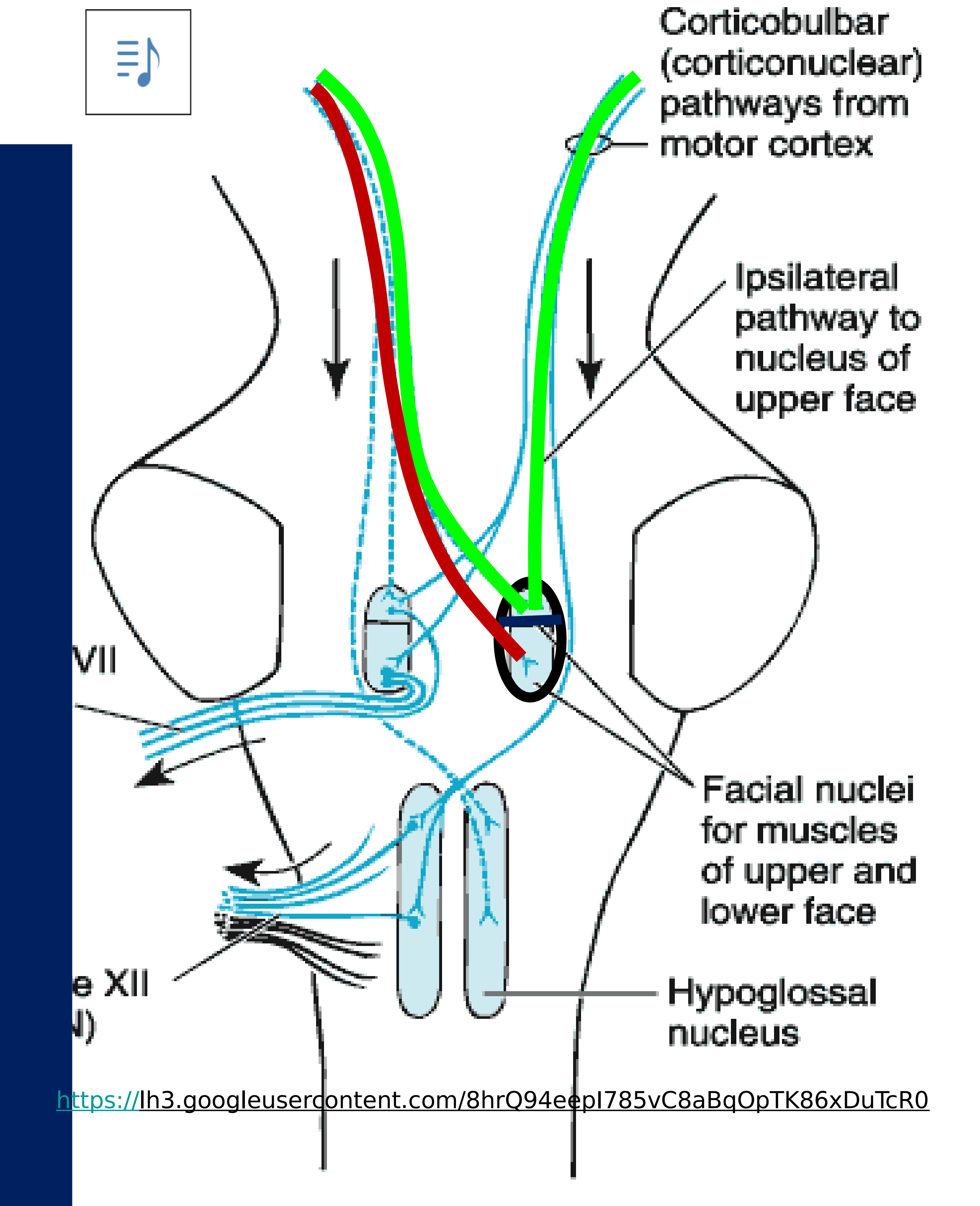
- Nuclei of the facial nerve
- Course & distribution of the facial nerve
- Test for integrity of the facial nerve
- Facial nerve lesions



Motor Nucleus
Parasympathetic nuclei
Sensory: Nucleus Solitarius
Special Lacrimatory N.
Uncertain N.
Superior Salivatory N.
Taste
Muscles of facial expression+ stapedius+ stylohyoid+ post. belly of digastric (2nd pharyngeal arch)
Preganglionic parasympathetic fibers
Anterior 2I3 of tongue
Lacrimal gland
Nasal,palatine& Pharyngeal glands
Submandibular &sublingual glands
Spinal nucleus of trigeminal

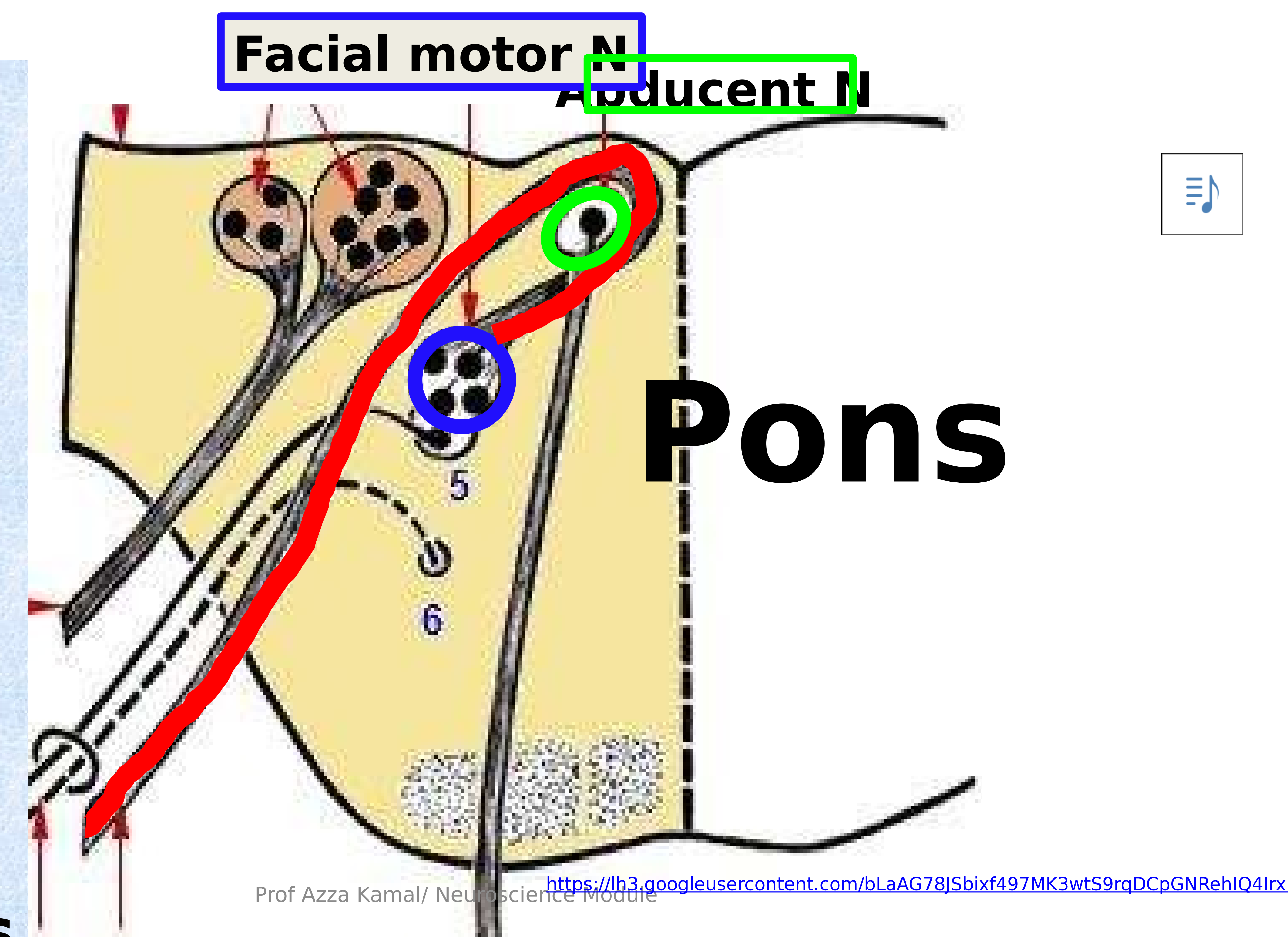
Facial Nerve Nuclei

Thus in UMNL of Facial Nerve muscles of upper face are spared while muscles of lower face are



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- **Fibers of facial motor n form a loop around abducent nucleus□ raises facial colliculus**



Parasympathetic Nuclei



Superior salivatory nucleus:

Gives parasympathetic fibers that passes in **chorda-tympani** ,relay in **submandibular ganglia** to supply **submandibular & sublingual salivary glands**

Special lacrimatory nucleus :

Gives parasympathetic fibers that pass in **greater petrosal nerve** to relay in **pterygopalatine ganglia** to supply **lacrimal gland**

Uncertain nucleus :

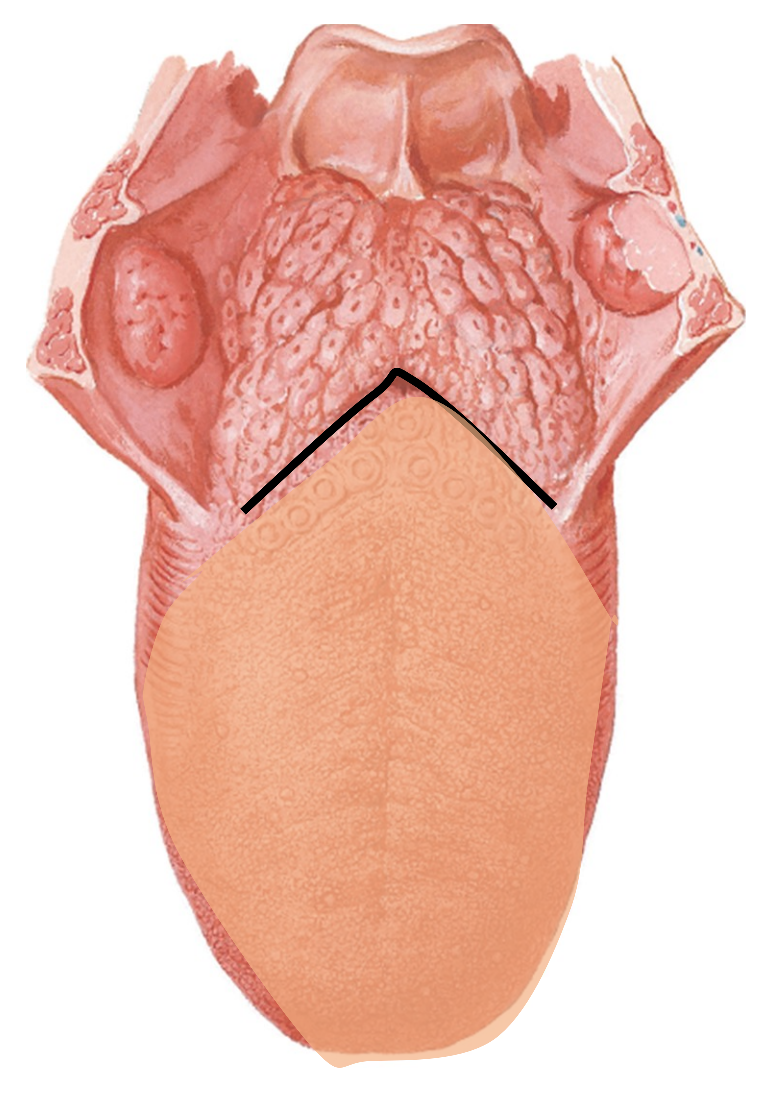
Parasympathetic fibers to **greater petrosal** relay in **pterygopalatine ganglia** to supply **glands of**

Nucleus Solitarius

Its upper part receives taste from:

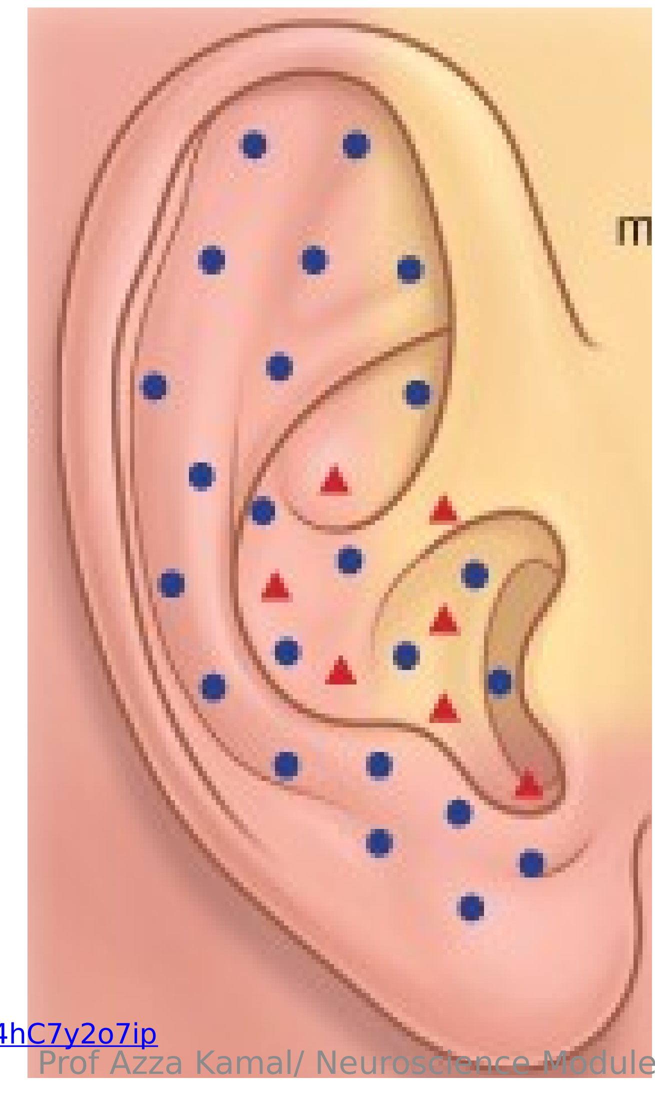
a) **Anterior 2/3 of tongue** → **carried by chorda tympani**

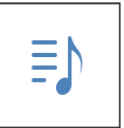
b) **Soft palate** → **by greater petrosal n**



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Facial nerve carries general sensation from concha of ear to Spinal N of trigeminal





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Which of the following is a parasympathetic nucleus of the facial nerve which supplies the submandibular and sublingual salivary glands?

a)Superior salivatory nucleus
b)Inferior salivatory nucleus
c)Special lacrimatory nucleus
d)Nucleus solitarius
e)Uncertain nucleus

MCQ tests nuclei of facial nerve

Facial nerve leaves brain at lower border of pons as two roots:
Motor & Sensory root
The sensory root is called nervus intermedius

nerve leave the pons medial to vestibulo--cochlear nerve.



Pons

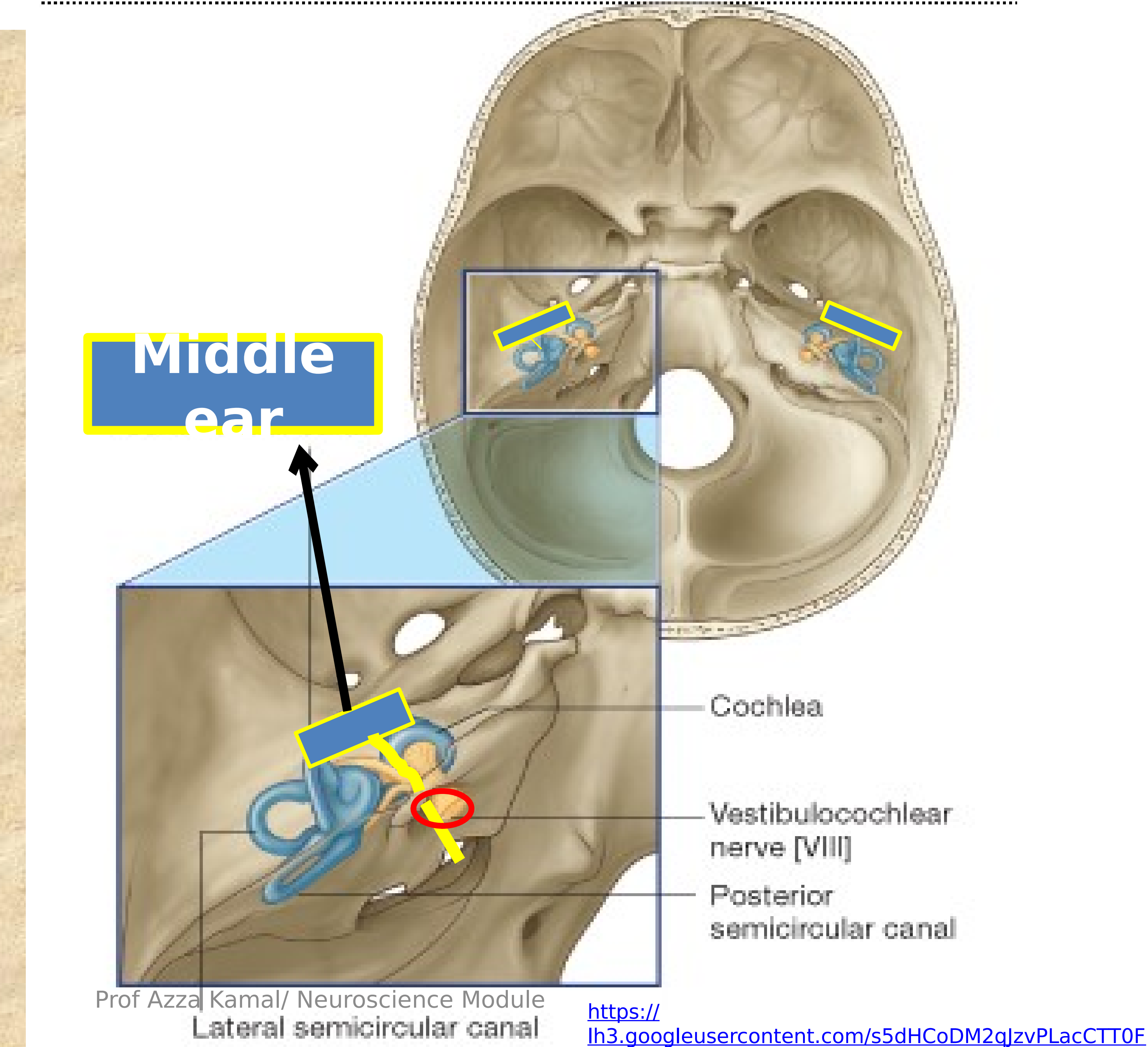
Facial Nerve

Vestibulocochlear N

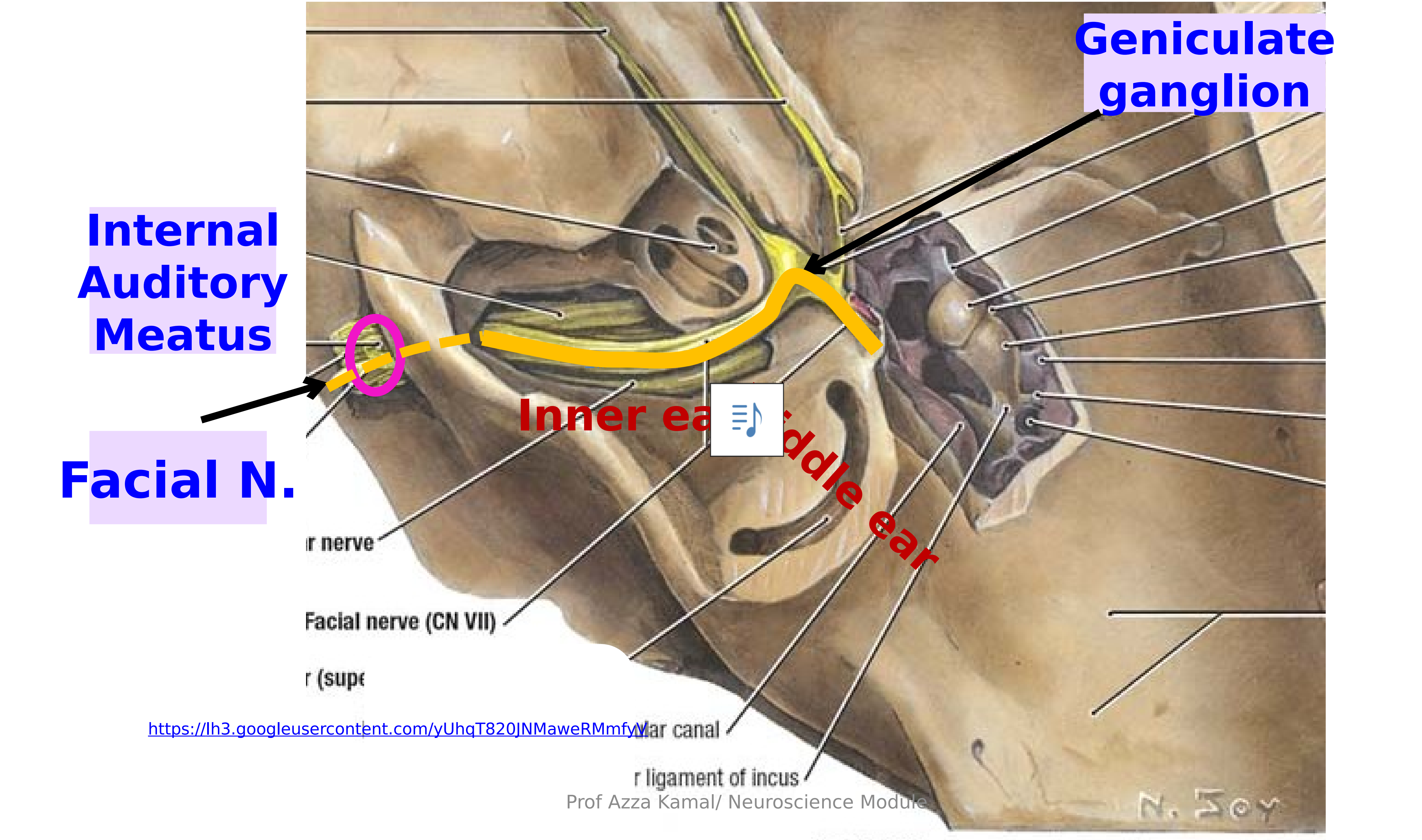
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❑Course:

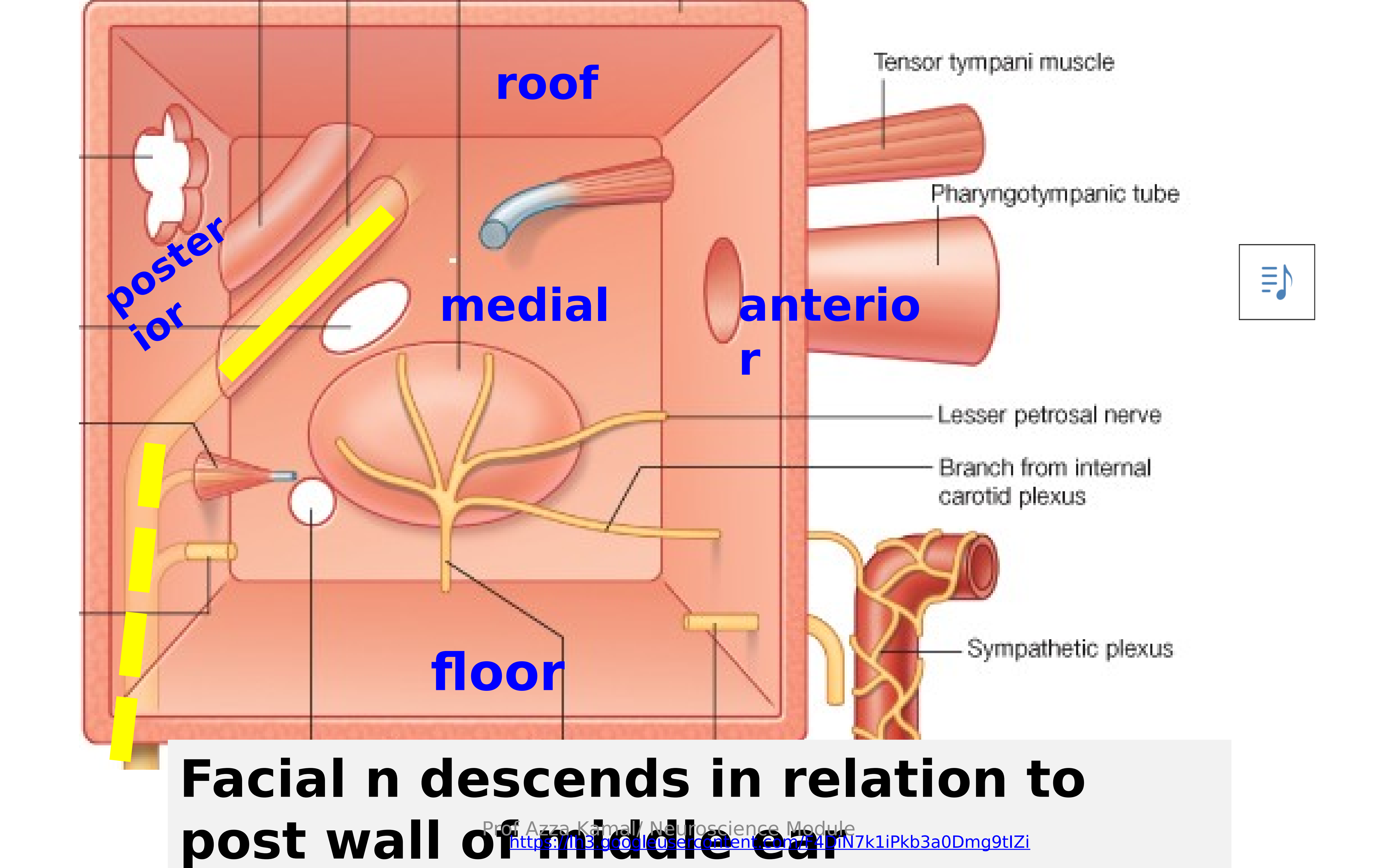
❑ Facial nerve enters the petrous temporal bone via internal acoustic meatus facial canal till it reaches medial wall of middle ear turns sharply backwards at



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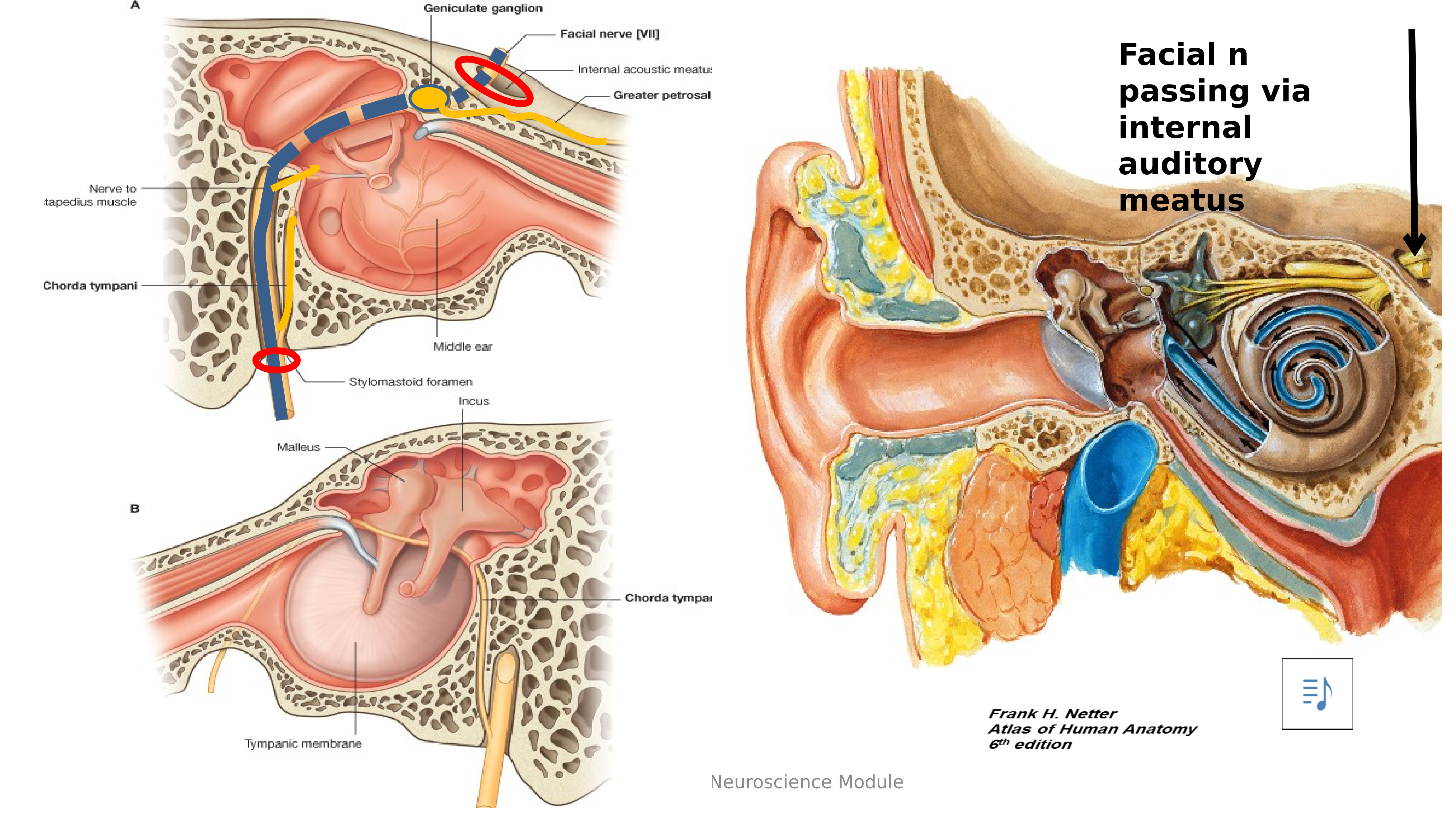


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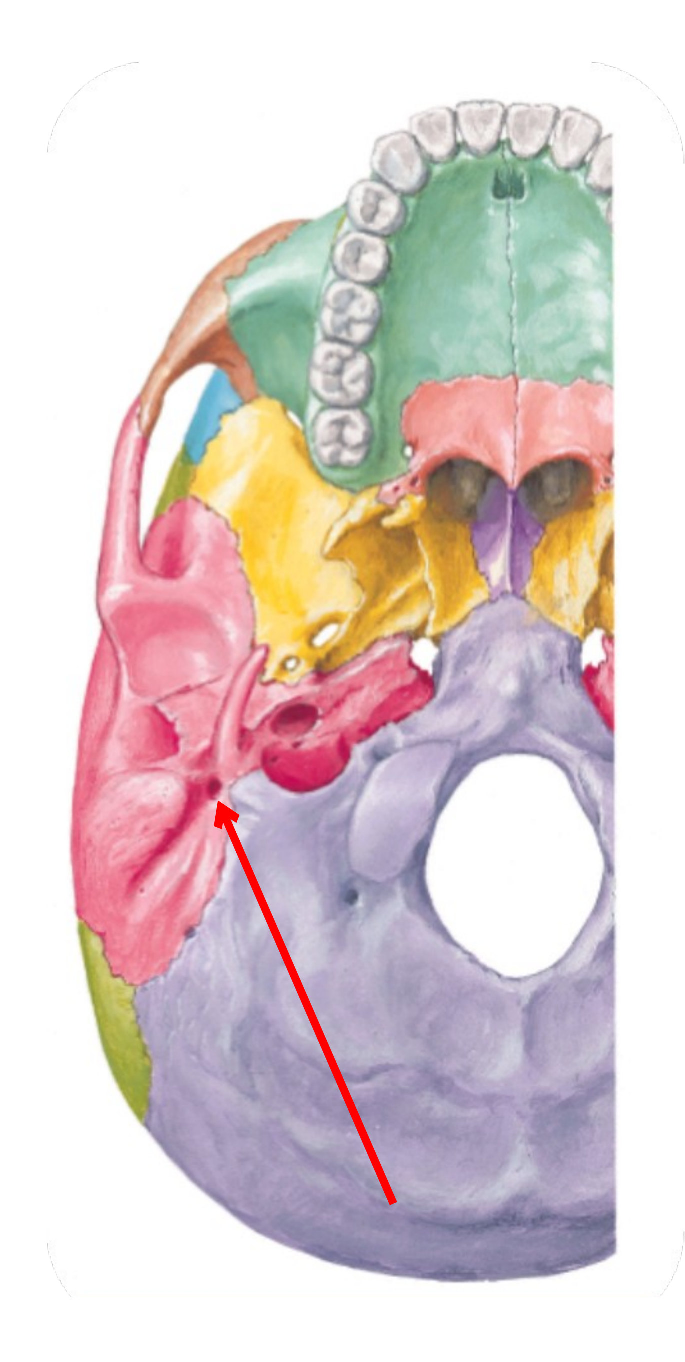


Facial n descends in relation to post wall of middle ear

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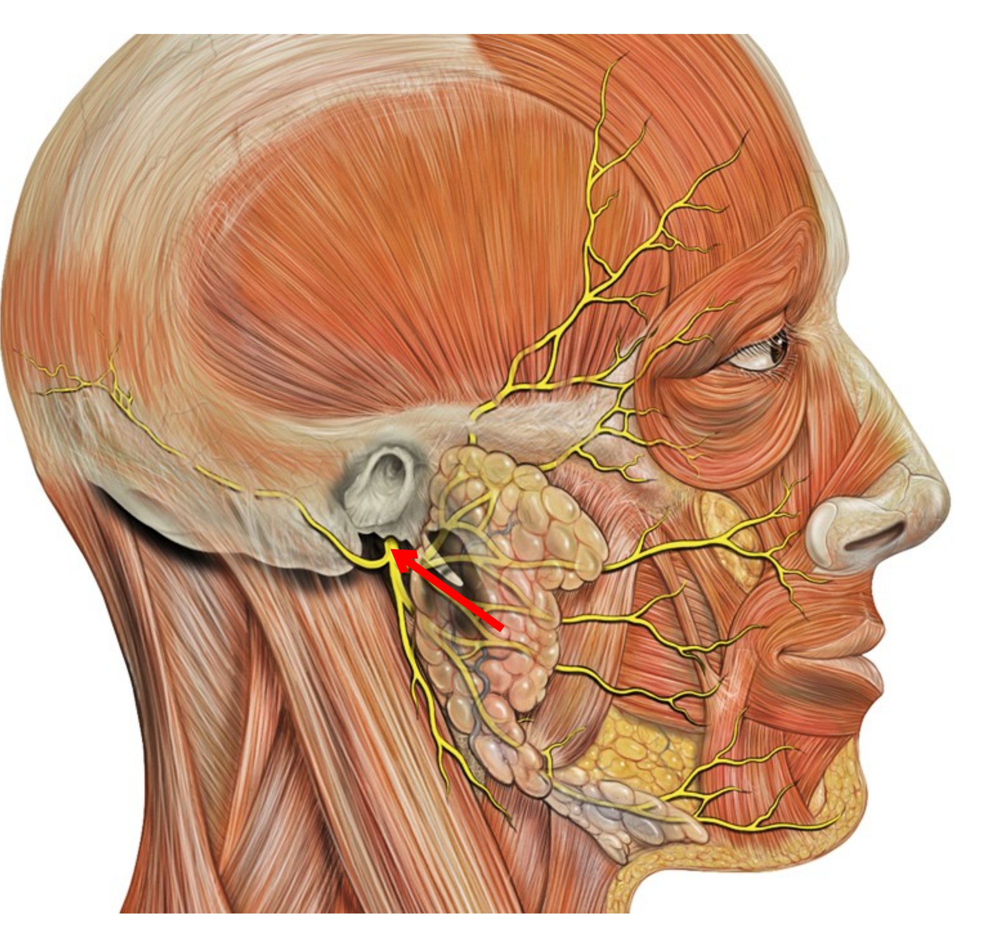


A
Geniculate ganglion
Facial nerve [VII]
Internal acoustic meatus
Greater petrosal
Nerve to
stapedius muscle
Chorda tympani
Middle ear
Stylomastoid foramen
Incus
Malleus
B
Chorda tympai
Tympanic membrane
Facial n passing via internal auditory meatus
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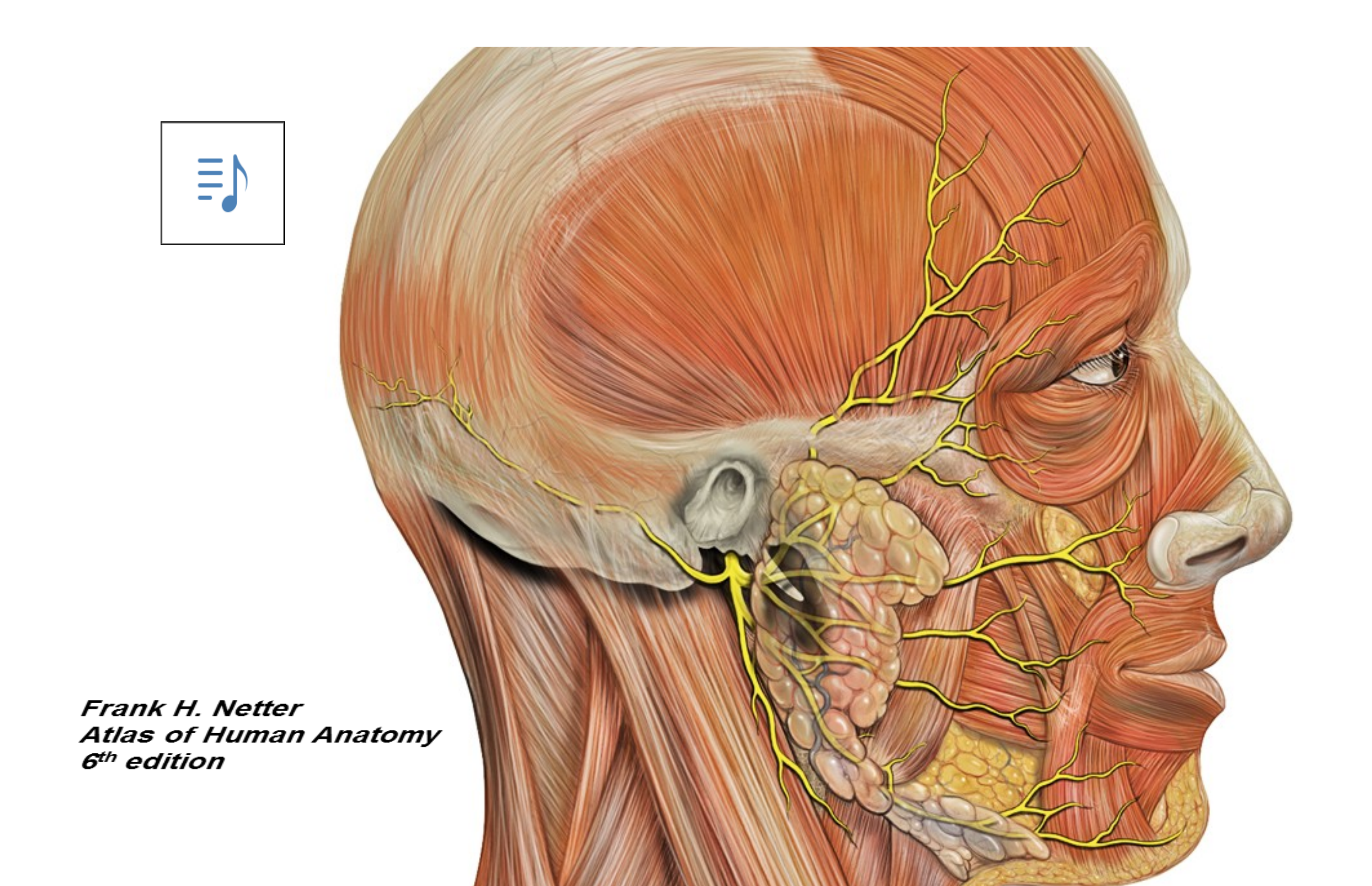




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Facial nerve leaves the sk through the stylomastoid foramen.



Temporal
Zygomatic
Buccal
Mandibular
Cervical

Facial n **enters parotid gland and divides into**
its 5 terminal branches **which emerge from anterior border of parotid to supply muscles of facial expression**

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1.Exits from the brain

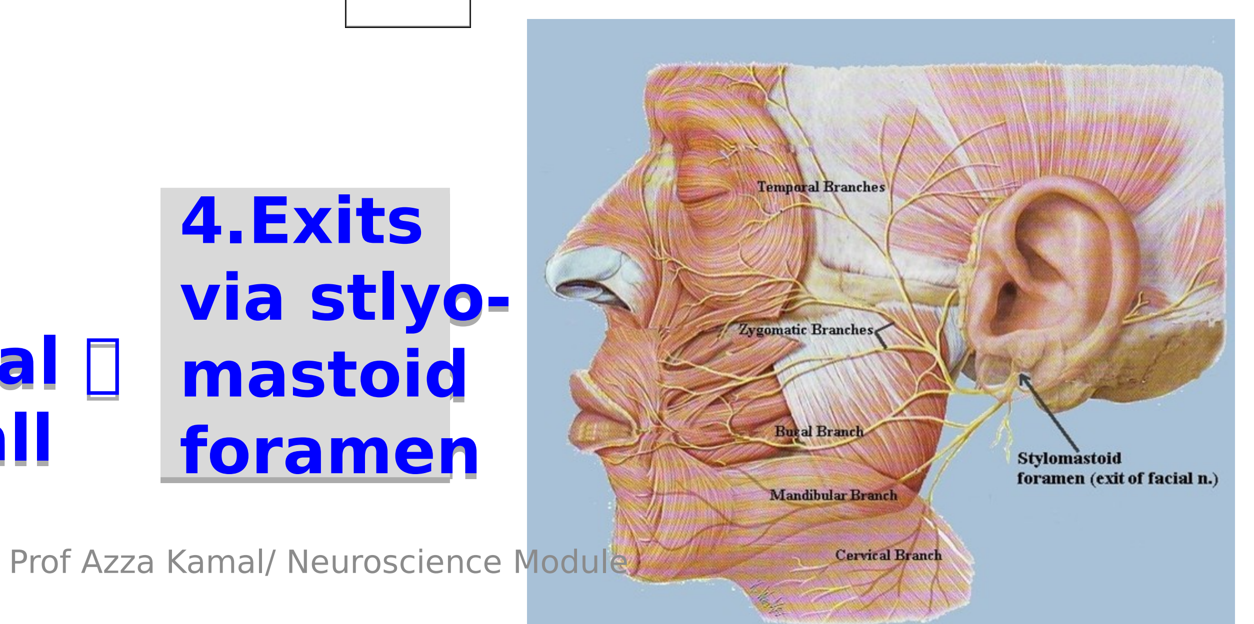
2.Enters the Internal Acoustic Meatus





3.Passes in the facial canal medial wall posterior wall of middle ear

4.Exits via stlyo-mastoid foramen



Facial n gives:

- 3branches within petrous part of temporal bone
- 3 branches after its exit from skull
- 5 terminal brs within parotid gland

1) Greater petrosal

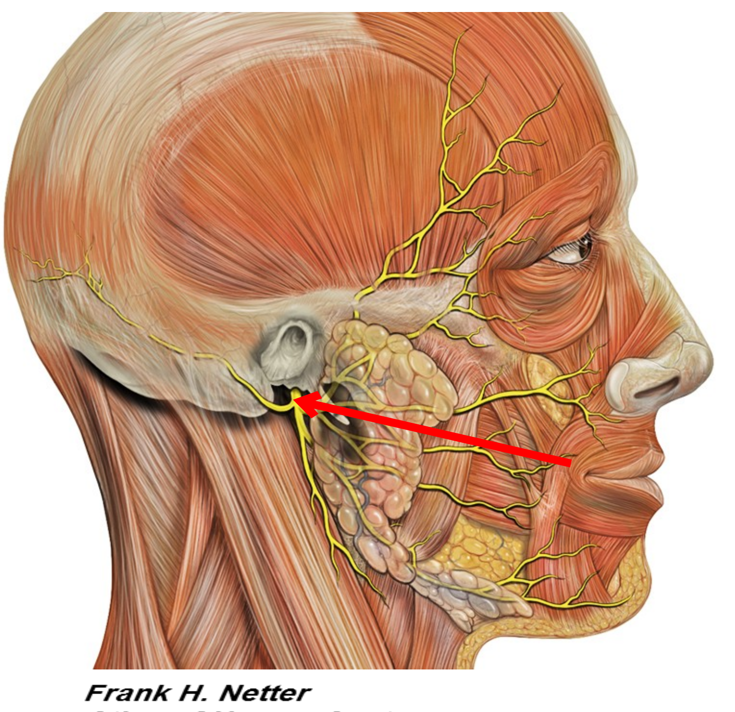
2) Nerve to stapedius

3) Chorda tympani
(arises 6 mm above stylomastoid foramen)

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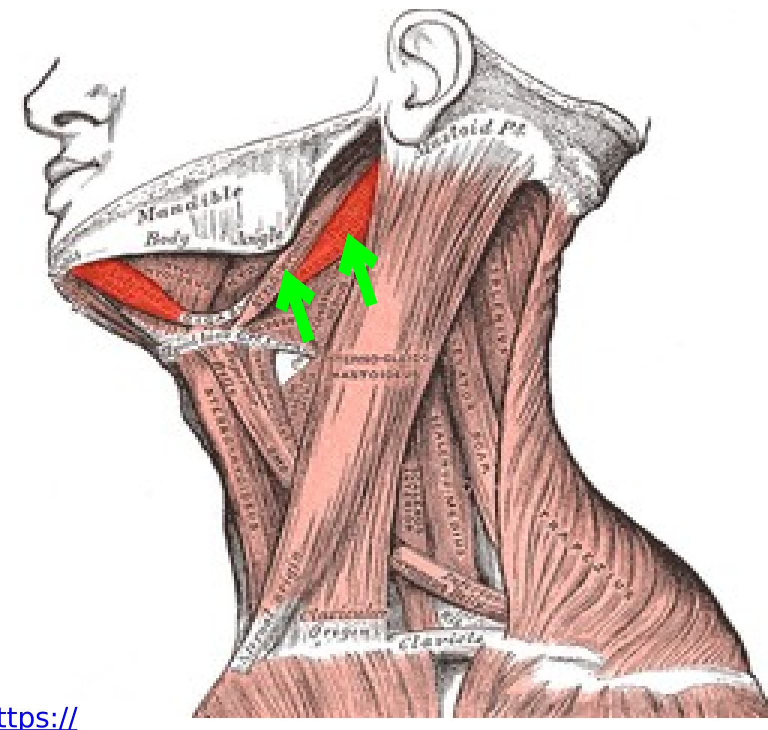
rous branches of facial nerve





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- **All sensory & parasympathetic fibers leave the facial n within the petrous bone**
- **Therefore at the stylomastoid foramen, facial n is purely motor**

After exit from stylomastoid foramen , facial n gives :

1) Post auricular n to occipitalis

2) Br to post belly of digastric

3) Br to stylohyoid

Greater petrosal N.

Arises from Facial n at the **geniculate ganglion**

Carries parasympathetic & taste fibers

It joins the deep petrosal n. to form the n. of pterygoid canal▯ pterygopalatine ganglion

ar nerve

Facial nerve (CN VII)

or (superior) semicircular canal

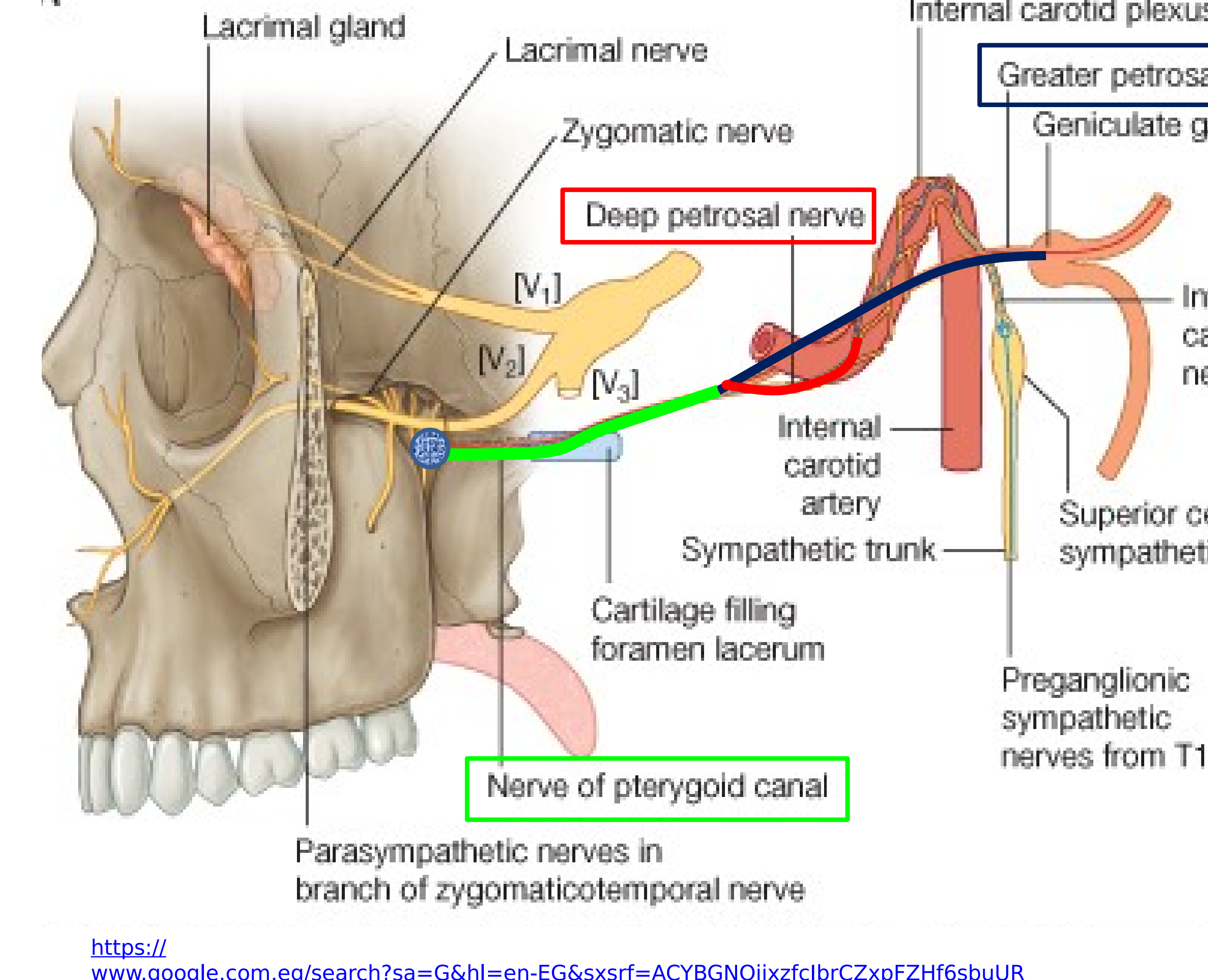
Prominence of lateral semicircular canal

Posterior ligament of incus



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Greater petrosal nerve joins the deep petrosal n. to form the n. of pterygoid canal pterygopalatine ganglion

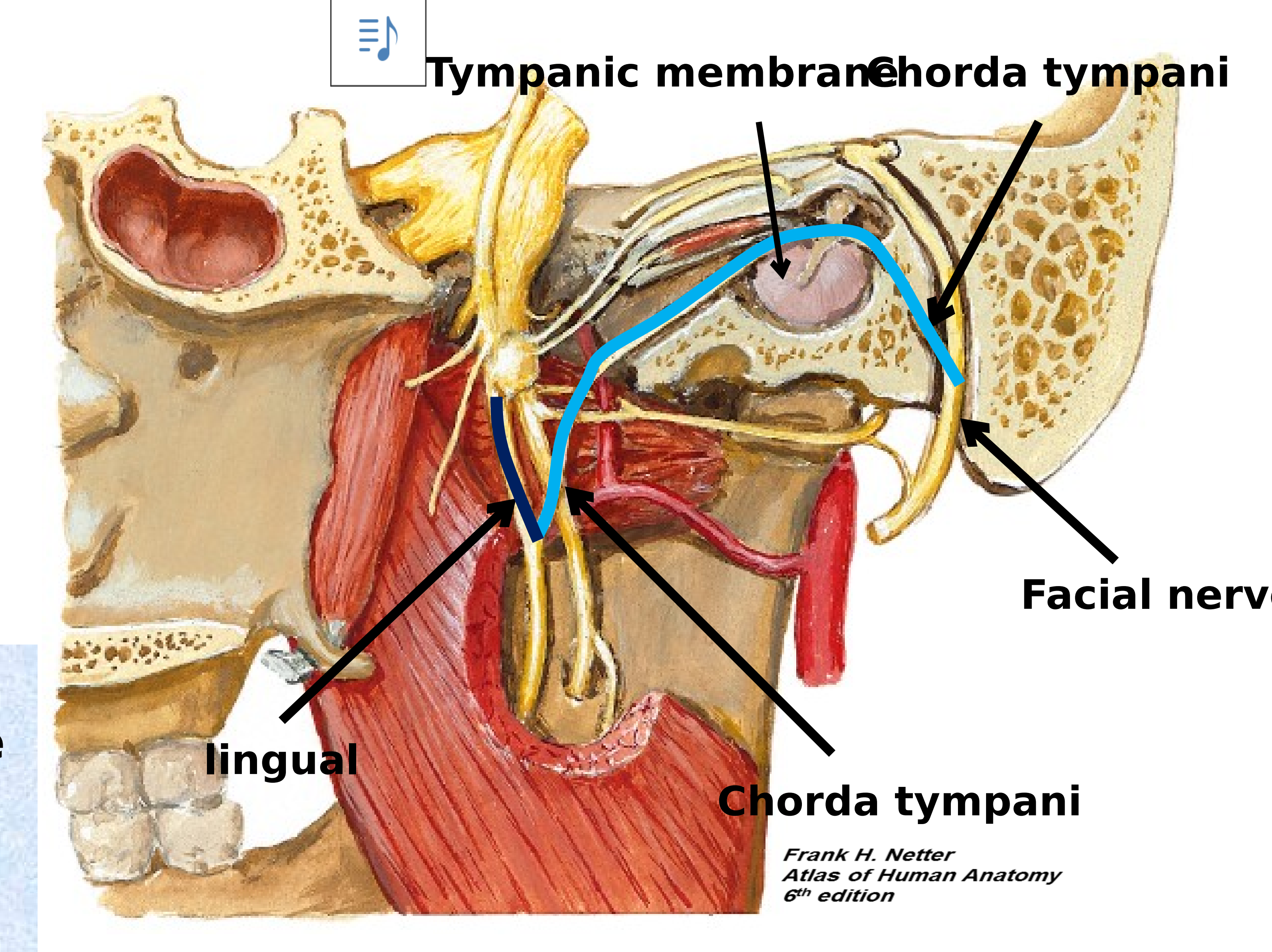


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Chorda tympani

- Arises from facial n 6 mm above stylomastoid foramen
- Runs across tympanic membrane □exits skull via petrotympanic fissure□ to infratemporal fossa

- Carries taste from anterior 2/3 of tongue
- Carries parasympathetic fibers to sublingual & submandibular salivary glands



Facial nerve carries purely motor fibers in which of the following sites?

a) At its exit from the brain at lower border of pons
b) At internal acoustic meatus
c) Inside facial canal of petrous part of tempora bone
d) Inside middle ear
e) After its exit from stylomastoid foramen



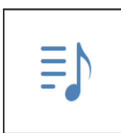
MCQ tests course and distribution of facial nerve

acial Nerve VII Lesions

Cortico-nuclear fibers

Upper motor neuron lesion UMNL

Lower motor neuron lesion LMNL



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Lesions of Facial Nerve

Supra nuclear lesion (UMNL):

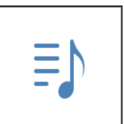
- Only the **lower part of face** of contralateral (**opposite side**) is paralyzed

Nuclear and infranuclear (LMNL):

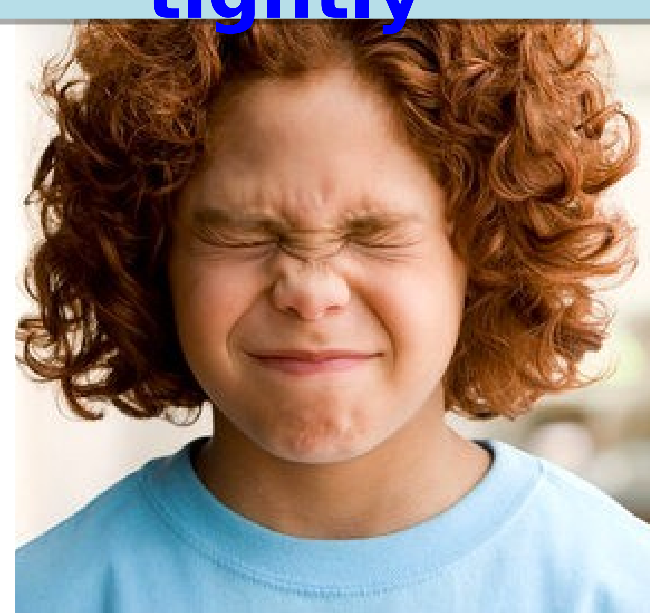
- All **muscles upper & lower face** ipsilateral (**on same side**) are paralyzed
- **If lesion is at stylomastoid foramen: only motor paralysis ipsilateral**

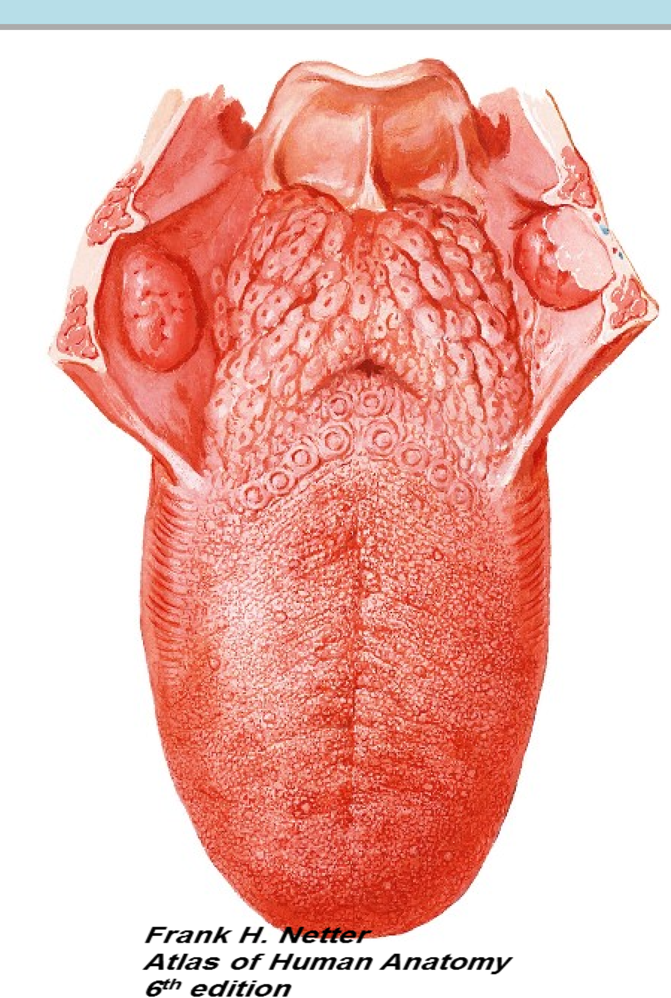


to test for integrity of Facial Nerve?



Close the eyes tightly







Raise the eyebrows.



e & show the teeth

by putting salt /sugar/vinegar on ant. 2/3 of tongue

Testing Facial nerve lesions

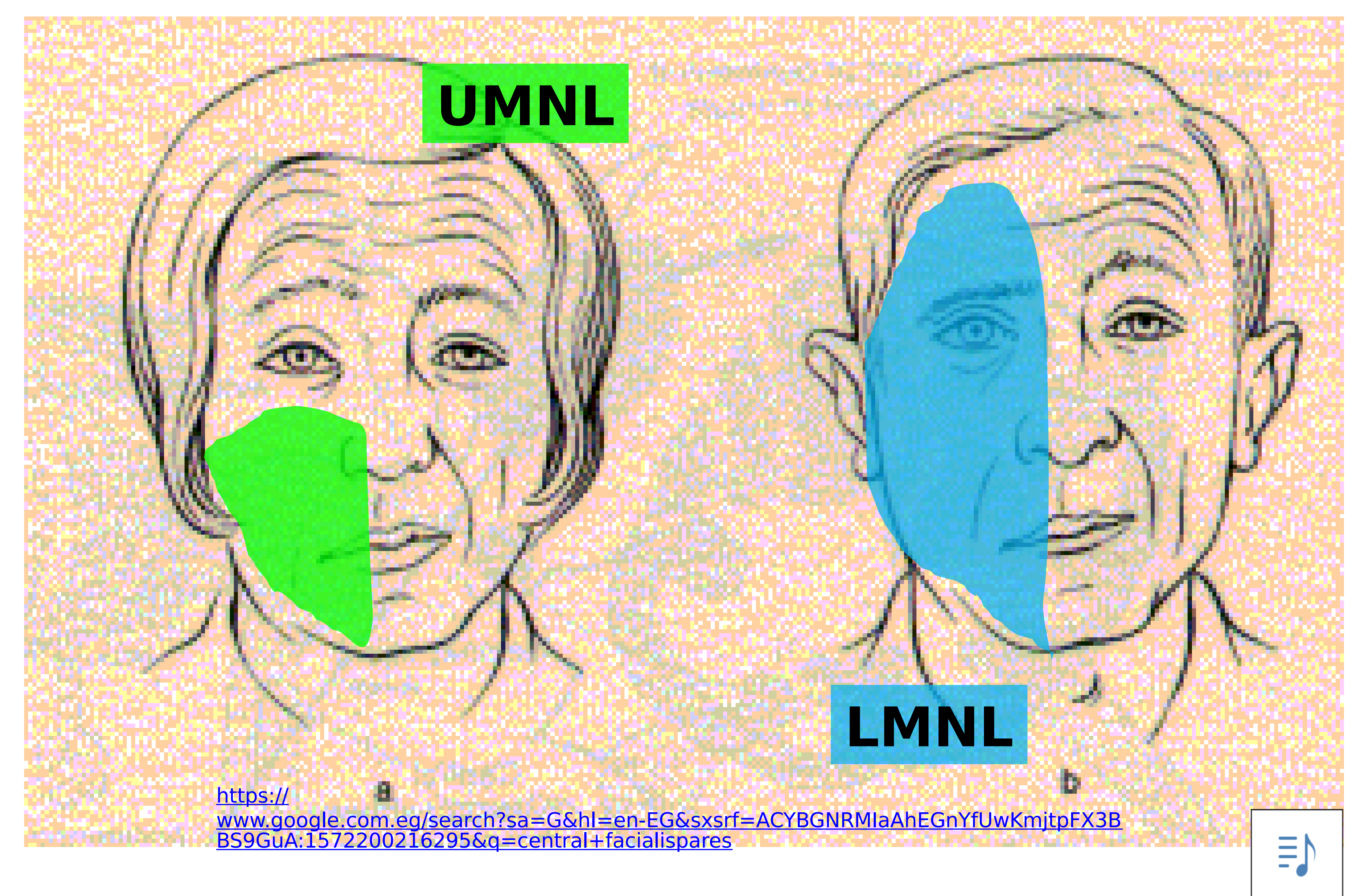
LMNL of left facial nerve



Raise **note** **w**

Smile or show me your teeth:
Note level of right & left angles of mouth

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Testing Facial nerve lesions

Answer the following Questions

- In UMNL of facial nerve which muscles are preserved?
- Branches of facial n containing parasympathetic fibers are:

1)…………………… 2) ……………………….

- 2 foramina in which facial nerve p

1)………………… 2) …………………………

Questions summarizing important points of facial nerve

THANK YOU

Reference:
Clinical Neuroanatomy
Richard S. Snell/ 6th edition
Pages : 339 - 341

